

EA APPENDIX B

**CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION**

CEMVR-PM-A

**CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION**

**DREDGED MATERIAL PLACEMENT SITE FOR OQUAWKA REACH:
LOCK 18 UPPER, FURNAL ISLAND, AND OQUAWKA DREDGE CUTS
UPPER MISSISSIPPI RIVER MILES 411.0-415.2**

AUGUST 2002

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SECTION 1 - PROJECT DESCRIPTION

LOCATION

There are three proposed dredged material placement sites. Site 3 is located on the right descending side of the Upper Mississippi River at RM 412.1-413.6, with the approximate center of the site at UTM, Zone 15, 4,530,620 meters N; 667,670 meters E. Site 5 is located on the left descending side of the Upper Mississippi River at RM 414.3-414.4, with the approximate center of the site at UTM, Zone 15, 4,531,250 meters N; 671,000 meters E. Site 8 is located on the left descending bank of the Upper Mississippi River at RM 414, with the approximate center of the site at UTM, Zone 15, 4,531,100 N; 671,290 E.

GENERAL DESCRIPTION

The proposed work involves both hydraulic and mechanical dredging and placement of dredged material from three chronic dredge cuts into three new terrestrial areas. These three new sites—Site 3, Site 5, and Site 8—are addressed in the EA (Environmental Assessment) and only Site 3 and the access area between Sites 5 and 8 are addressed in this Clean Water Act Section 404 (b)(1) Evaluation.

The availability of operationally feasible, environmentally acceptable, and economically sound dredged material placement sites at locations requiring chronic dredging presents a constant challenge to those Federal and State agencies charged with managing the UMR (Upper Mississippi River). Historic sites for this dredging area have become less environmentally acceptable at the quantities and frequencies that have occurred in the past. (See Background Information section in the EA.)

AUTHORITY AND PURPOSE

The authority and purpose of the evaluation portion of this document is to comply with Section 404 of the Clean Water Act pertaining to guidelines for placement of dredged or fill material into the waters of the United States. This evaluation, in conjunction with the EA, will assist in analysis of the alternatives for this project, resulting in the base plan (Federal Standard). Further, this evaluation will provide information and data to the State water quality certifying agency demonstrating compliance with State water quality standards. This will aid in the decision-making process concerning State 401 water quality certification.

GENERAL DESCRIPTION OF DREDGED MATERIAL

Sampling of the dredged sediments for this chronic dredge cut was undertaken on July 28, 1999. Complete detailed results can be found on Table EA-4 of the Environmental Assessment. The amount of fines in the sediment is very low. The percent of material passing the No. 200 sieve in all samples ranged from 0.1% to 0.2% and averaged 0.16%.

Laboratory testing was performed in accordance with EM 1110-2-1906, dated November 30, 1970, revised May 1, 1980, and August 20, 1986. All samples were oven dried at 110 degrees centigrade, and then shaken through a nest of sieves ranging in size from 3.81 cm (1.5 in) to #200.

Visual classification is in accordance with the USCS (Unified Soils Classification System).

DESCRIPTION OF THE PROPOSED PLACEMENT SITES

Complete and detailed information on the placement sites can be found in the EA (see Section II. Project Location and Description; and Section V. Environmental Impacts of the Preferred Alternative).

DESCRIPTION OF PLACEMENT METHOD

Dredged material would be placed at Sites 3 and 8 by both hydraulic and mechanical means and at Site 5 by mechanical means only.

A hydraulic dredge utilizes a cutterhead in combination with a centrifugal pump to entrain dredged solid materials in high velocity water to excavate dredged material. Dredged material is then pumped in slurry via floating discharge lines and onto the placement areas through moveable shorepipe. Shorepipe is positioned by use of a bulldozer and pipe handlers to the desired placement site locations.

Mechanical dredged material placement requires at a minimum: one crane barge or backhoe, one tender boat, two material barges, and one end loader/bulldozer. A crane barge mechanically excavates the sediment from the dredge cut and places it on the material barges. The tender boat moves the filled material barges to the off-loading site. The dredged material is off-loaded by a crane barge, backhoe, or end loader, and the bulldozer moves the material onto the placement site.

The access area between Sites 5 and 8 would be filled using a bulldozer to move material from the slope onto the lower channel/wetland to create a flat surface for equipment access. A culvert would be installed underneath the fill material to maintain the hydrological connection between the wetlands on either side of the access area.

SECTION 2 - FACTUAL DETERMINATIONS

PHYSICAL SUBSTRATE DETERMINATIONS

A. Substrate Elevation and Slope. Flat pool for the UMR in Pool 18 is 528.0 feet MSL (Mean Sea Level of 1912). The average elevation at Site 3 is approximately 530 feet MSL. Site 5 elevations range from approximately 539 feet MSL to approximately 526 feet MSL. The elevations at Site 8 range from approximately 527 feet MSL to 530 feet MSL. Although the placement sites are all at or near the flat pool elevation of the Mississippi River, levees separate the river from each of the sites.

B. Sediment Type. Site 3 consists of Zook silty clay loam and Dolbee silt loam. The Henderson County Soil Survey shows Site 5 as being a swamp and having no associated soil type, and Site 8 as including Sawmill silty clay loam, Thorp silt loam, Littleton silt loam, and swamp. The dredged sediments have been described in the Environmental Assessment in Section II, Project Location and Description and in Table EA-2, Grain Size Analysis.

C. Dredged/Fill Material Movement. Return water from hydraulic dredging at Sites 3 and 8 would flow through existing levee district drainage ditches to their respective pump stations and would be pumped out into the river at those locations. Site 5 would have mechanical dredged material placement and the material is expected to stay on-site. The material moved into the low wetland/channel area to create an access area between Sites 5 and 8 would be used by heavy equipment to access Site 8, and this equipment is expected to compact the material so that it would not migrate off-site. No movement of the dredged material is anticipated from any of the placement sites.

D. Physical Effects on Benthos. No significant impacts are anticipated to benthic organisms from using Sites 3, 5, and 8, and the access area between Sites 5 and 8.

E. Actions Taken to Minimize Impacts. Dredging quantities would be kept to those necessary to maintain safe navigation.

WATER CIRCULATION AND FLUCTUATION

A. Water. The proposed action would have a temporary and insignificant effect on water quality in the UMR. Water chemistry, water temperature, pH, clarity, color, odor, taste, dissolved gas levels, nutrient levels or organic matter influxes would either be nonexistent or would cause insignificant and temporary impacts to aquatic organisms. Aquatic vegetation is absent in the project area and would not be affected. Impacts to the human population concerning the suitability of this water body for human consumption, recreation, and aesthetics would be negligible or nonexistent.

B. Current Patterns and Water Circulation. The proposed action would have very little effect on water current patterns and circulation. Minimal changes in current pattern would occur at floodplain Sites 5 and 8 during flood events. A culvert would be installed at the access area between Sites 5 and 8 to allow normal water flow between the wetlands on either side of the access area. During flood events, some water may back up northeast of the access area, but this water would then enter existing drainage ditches to the southeast of the access area and move toward the existing pump station.

C. Normal Water Level Fluctuation. Minimal impacts would occur with regard to prolonged periods of inundation, exaggerated extremes of high or low water, or other water level modifications as a result of this action. A HEC-RAS (Hydrologic Engineering Center-River Analysis System) model indicates that the impact of placement sites 5 and 8 on the Mississippi River floodplain would be negligible.

D. Actions Taken to Minimize Impacts. Dredging quantities would be kept to those necessary to maintain safe navigation. Terrestrial placement into areas already disturbed through agricultural use and levee construction and maintenance is intended to minimize ecological impacts.

SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS

A. Effects on Physical and Chemical Properties of the Water Column. Impacts on turbidity levels, suspended particulate levels, light penetration, dissolved oxygen, toxic metals, organic influxes, pathogens, and aesthetics would be minor and insignificant because of the terrestrial placement of dredged material.

B. Effects on Biota. Impacts to the aquatic biota would be negligible and insignificant due to the terrestrial placement of dredged materials.

C. Actions Taken to Minimize Impacts. Dredging quantities would be kept to those necessary to maintain safe navigation. Terrestrial placement of the dredged sediments would minimize impacts to the aquatic environment.

CONTAMINANT DETERMINATIONS

Grain size analysis of material from the bed material of these dredge cuts has been classified as SP, Medium to Fine Sand (see Table EA-2 of the Environmental Assessment). Because this dredged material is greater than 80% sand/gravel, further testing is not required since contaminants have a greater affinity for smaller-sized particles. Dredged material is likely to be free from chemical, biological, or other pollutants when it is composed primarily of sand, gravel, or other naturally occurring inert materials, as it is here. An elutriate test would have been performed to determine if contaminants were present if the material was greater than 20% silt/clay. Unless there is some other reason to believe this material may be contaminated, it is unlikely that testing other than a grain size analysis would be performed.

This dredged material meets the exclusion from testing/evaluation criteria as explained in the CWA 404(b)(1) Guidelines and the Inland Testing Manual. Existing information for this project provides a sufficient basis for making factual determinations concerning impacts to waters of the United States.

AQUATIC ECOSYSTEM AND ORGANISMIC DETERMINATIONS

A. Effects on Plankton and Nekton. No significant impacts are anticipated. During hydraulic dredging, the extended flushing action from return water may impact planktonic organisms by washing them down river. These aquatic organisms are regularly exposed to flushing

action from water level fluctuations. Affected areas would recolonize quickly from drifting planktonic organisms from upstream locations after placement ceases. Free-swimming organisms would avoid the area during dredging and placement activities.

B. Effects on Benthos. No impact on benthos should result from placement of material at Sites 3, 5, and 8, and the access area between Sites 5 and 8.

C. Effects on Aquatic Food Web. Given the low contamination levels associated with sandy dredged material, no significant impacts are anticipated to any life stage of aquatic or terrestrial organism. The proposed action would not cause or establish the proliferation of any undesirable competitive species that may usurp resident species. If any such proliferation should occur, it should not be caused solely by the proposed action. No significant reduction or elimination of any food chain organism would occur if the proposed sites were utilized.

D. Effects on Special Aquatic Sites. Approximately 1.1 acres of wetlands would be impacted at Site 3 and the access area between Sites 5 and 8. These wetlands provide minor wildlife habitat functions for small animals, such as amphibians, songbirds, and small mammals. These wetlands are small and isolated from a larger aquatic ecosystem by levees and agricultural land, and the compensatory mitigation of 1.1 acres would compensate for the loss of these wetlands. This compensatory mitigation would occur within an existing agricultural area at RM 422R through the cessation of farming and the plugging of drainage tiles. There are no refuges, mudflats, vegetated shallows, or riffle and pool complexes in the project area.

E. Threatened and Endangered Species. (See EA Section V. Environmental Impacts of the Preferred Alternative, C. Natural Resources, Endangered Species.)

F. Other Wildlife. Other wildlife normally present would temporarily avoid the project area during the dredging operation. The dredged material placement Sites 5 and 8 may provide high ground for small mammals and reptiles when most of the floodplain areas are inundated. Placement of dredged material onto agricultural land may reduce the availability of food for some wildlife, but the presence of crop fields in the vicinity minimizes the effect of the loss.

G. Actions Taken to Minimize Impacts. Dredging quantities would be kept to those necessary to maintain safe navigation. Terrestrial placement would avoid impacts to the aquatic ecosystem. The wetlands near Site 8 have been completely avoided in the final preferred alternative.

PROPOSED PLACEMENT SITE DETERMINATIONS

A. Mixing Zone Determinations. A mixing zone is that volume of water at a placement site or discharge site required to dilute contaminant concentrations associated with a discharge of dredged material to an acceptable level. Since terrestrial placement is involved, no violation of any standard would result during placement of dredged material.

B. Determination of Compliance with Applicable Water Quality Standards. Section 401 water quality certification would be obtained from the States of Iowa and Illinois prior to implementation.

C. Potential Effects on Human-Use Characteristics. Implementation of the preferred alternative for this project would have no significant effect on municipal or private water supplies;

recreational or commercial fisheries; parks; national monuments; or other similar preserves. There would be temporary disruption to water-related recreation and commercial fisheries in the immediate area of the project while the dredge is placing material on the sites.

DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

Utilization of the proposed levee placement and agricultural field sites would cause only a minor impact to any component of the aquatic ecosystem. Detailed information on cumulative effects can be found in the EA (see Section V. Environmental Impacts of the Preferred Alternative, C. Natural Resources, Cumulative Impacts).

No significant indirect and cumulative impacts are expected from terrestrial placement of dredged material at Sites 3, 5, and 8.

Placement of dredged material at Sites 3, 5, and 8 should not decrease overall aquatic productivity of the project area or downstream.

DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

Placing the dredged material on inland sites eliminates impacts to more environmentally productive areas, such as main channel borders and backwaters. Compensatory wetland mitigation would be provided for the 1.1 acres of wetland impacts at Site 3 and the access area between Sites 5 and 8. No other secondary effects to the aquatic ecosystem are anticipated. This determination is subject to reevaluation if warranted by Federal, State, or local agency comment, as well as from the interested public.

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**SECTION 3 - FINDINGS OF COMPLIANCE OR NONCOMPLIANCE
WITH THE RESTRICTIONS ON PLACEMENT**

1. No significant adaptations of the 404(b)(1) Guidelines were made relative to this evaluation.
2. Alternatives that were considered in addition to the proposed action were as follows:

No Project	Bankline Placement
No Change	Upland Placement
Floodplain Forest Placement	Thalweg Placement
3. Certification under Section 401 of the Clean Water Act would be obtained from Iowa and Illinois prior to implementation.
4. The project would not introduce hazardous or toxic substances into the waters of the United States or result in appreciable increases in existing levels of toxic materials.
5. No significant impact to state or federally listed threatened or endangered species is anticipated from this project.
6. No municipal or private water supplies would be affected. There would be no adverse impacts to recreational or commercial fishing. No significant adverse changes to the ecology of the river system would result from this action.
7. No contamination of the river is anticipated. The proposed actions would cause only minimal adverse environmental effects when performed separately, and would have only minimal cumulative adverse effects on the environment.
8. No other practicable alternatives have been identified. The proposed actions are in compliance with Section 404(b)(1) of the Clean Water Act, as amended. The proposed actions would not significantly impact water quality and would improve the integrity of an authorized navigation system.
9. Approximately 1.1 acres of wetlands will be restored to offset the unavoidable loss of 1.1 acres of wetlands and associated functions and values resulting from the proposed actions.

Date

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